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many different stages irregularities in chromosome distribution may occur in a variety of ways. GATES believes several characters of *O. gigas* cited by DE VRIES as occurring independently of chromosome doubling are the result of the tetraploid condition with its larger cells and nuclei. Many such differences are attributed to causes fundamentally quantitative. The interpretation of NILSSON, that *O. gigas* originates by the accumulation of factors for size, is held by GATES to be contradicted by the cytological facts and by the sudden origin of giant types with their subsequent wide variation. Although some *Oenothera* characters are Mendelian in their behavior after they appear, Mendelian combinations in NILSSON's sense are inadequate to account for their first appearance.—L. W. SHARP.

A heterosporous fern.—LIGNIER²⁴ has published a new genus (*Mittagia*) from the Lower Westphalian strata, which is the first heterosporous fossil fern to be described. That such a group did occur is, of course, postulated by the existence of the seed ferns, but this is the first demonstration of its presence. LIGNIER, too, has sounded a note of warning by his discovery. He was at first inclined to consider that his sections were of a pteridosperm, *Lagenostoma Lomaxi*, so similar in structure are the outer tissues of the sporangia in the two forms. When he found four megaspores to a sporangium, a stomium present, and the sporangia arranged in a sorus, he knew that he had something different. His sporangium, however, he considers did not dehisce, and so, like *Lepidocarpon*, is a stage toward the seed habit. His conclusion that the sporangia belonged to a fern is based chiefly on their structural resemblance to *Lagenostoma*, and on their arrangement in a sorus. He has further distinguished them from the lycopod and equisetum lines, from *Lepidocarpon*, *Miadesmia*, *Selaginella*, heterosporous calamites, etc. LIGNIER's intensive study of the small amount of material at his disposal and his logical deductions are exceedingly interesting and valuable.—R. B. THOMSON.

Evaporation in Skokie Marsh.—Using the Livingston atmometer, SHERFF²⁵ measured the evaporating power of the air in a marsh habitat near the city of Chicago during the summer of 1911. The average daily rate of evaporation for the lowest stratum of vegetation was 3 cc. for the *Typha* association, 4.27 cc. for the reed swamp, 4.5 cc. for the swamp meadow, and 7.9 cc. for the swamp forest of *Quercus bicolor* and *Fraxinus americana*. This forest is normally antecedent to a truly mesophytic forest such as that found by the reviewer to have an average daily rate of 8.1 cc.²⁶ During September and October of the

²⁴ LIGNIER, O., Un nouveau sporange séminiforme. Mém. Soc. Linn. Normandie 24:49-65. 1913.

²⁵ SHERFF, E. E., Evaporation conditions at Skokie Marsh. Plant World 16:154-160. 1912.

²⁶ BOT. GAZ. 52:193-208. 1911.